REMARKS/ARGUMENTS

Claim 21 is rejected under 35 USC 102e as being anticipated by Ji (US 2005/0073607);

Claims 1 and 3-20 are rejected under 35 USC 103a as being unpatentable over

Campbell (US 6133957) in view of Hahn (US 7092033);

5   **Claim 2 is rejected under 35 USC 103a as being unpatentable over Campbell in view of**

Hahn as applied above to claim 1, and further in view of De Haan (PCT Pub

WO03/038753, also published as US 7206027); and

Claim 22 is rejected under 35 USC 103a as being unpatentable over Ji as applied to

claim 21 above, and further in view of Yamashita (US 5347599)

10   Claims 1-22 are cancelled without prejudice or disclaimer to the subject matter thereof.

New Claims

       New claims 23 to 38 are added. No new matter is entered. Comments providing support

for each new claim and concerning the patentability of the new claims with regards to the

15   cited references are provided in the below paragraphs.

New independent claims 23 and 31

       Concerning support for the units of claim 23, the applicant firstly points to figure 2 of

the present invention as filed showing the claimed structure of the pixel_diff_1 unit 206, the

20   pixel_diff_2 unit 208, the angle checking unit 210, and the weighted blending unit 216.

       Concerning support for the claimed operation of the first pixel difference unit, paragraph

[0031] states, "on either side of the normal axis 150, a pair of pixel sets (or a corresponding

angle), which results in two angle values coming out of the first pixel difference unit 206".

More details are provided at the end of paragraph [0036] stating, "As such, two angle values,

25   Θ_1 on the right side (which corresponds to a right pixel difference Right_Pixel_Diff), and Θ_2

on the left side (which corresponds to a left pixel difference Left_Pixel_Diff) of the normal

axis 150, are determined." The applicant points out that none of the cited references teach or

suggest a first pixel difference unit for determining two candidate blending angles according

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to pixel difference values on either side of a normal axis of a target pixel.

Concerning support for the claimed operation of the second pixel difference unit, paragraph [0038] states, "the second pixel difference unit 208 performs the following operation, which may be termed as 'reference pixel difference algorithm', to render a second
5   pixel difference set which includes two reference pixel differences Right_Ref_Diff and Left_Ref_Diff." Additionally paragraph [0043] indicates that the reference angle is 45 degrees in one embodiment "wherein Right_Ref_Diff ... of a pair of pixel sets ... along an angle on the right side of the normal axis 150 (here, 45 degrees,) whereas Left_Ref_Diff along an angle on the left side of the normal axis 150 (here, -45 degrees.)" The applicant
10   points out that none of the cited references teach or suggest a second pixel difference unit for determining two reference pixel differences in the image field being along a reference angle on either side of the normal axis of the target pixel.

Concerning support for the claimed operation of the angle selection unit, paragraph [0045] states, "After the operations of the first pixel difference unit 206 and the second pixel
15   difference unit 208, at least the parameters Right_Pixel Diff (which corresponds to Θ_1) Left_Pixel_Diff (which corresponds to Θ_2) Right_Ref_Diff, and Left_Ref_Diff are passed to the angle checking and correcting unit 212, and the angle checking and correcting unit 212 will operate, according to these parameters, in conjunction with the operation of the angle voting unit 214, to determine an optimal angle Opt_Angle." The applicant points out that
20   none of the cited references teaches an angle selection unit for determining an optimal blending angle according to two candidate angles and two reference pixel differences.

Concerning support for the claimed operation of the weighted blending unit, paragraph [0096] stating, "the weighted blending unit 216 operates to weighted blend (or interpolate) pixel information along the selected optimal angle Opt_Angle". The applicant again points
25   out that none of the cited references teach such operation because the optimal angle determined by the present invention is not taught or suggested by the cited references.

Therefore, for at least the reasons shown about that none of the cited references teach or suggest the specific claimed features of the present invention, new independent claim 23

should be found allowable with respect to the cited references. A similar argument also
applies to new independent claim 31, which is a corresponding method claim. Dependent
claims 24-30 and 32-38 should be found allowable for at least the same reasons as their
respective base claim. Further comments regarding support and patentability for the

5   dependent claims are provided in the following paragraphs.

Claims 24 and 32

      Concerning support for claim 24, the applicant points out that figure 2 also shows the
gradient unit 204, and paragraph [0021] states, "the gradient unit 204 first operates to

10   determine if the gradient of pixel values in the upper line (eg the line 11) and the gradient of
pixel values in the lower line (eg the line 130) of a current pixel to be interpolated (eg the
additional pixel 125) posses certain characteristics." Also, paragraph [0029] explains that the
first pixel difference unit generates the two angles according to the gradient stating, "After the
value of the parameter Gradient has been determined, the first pixel difference unit 206 will

15   operate to calculate a first pixel difference set, and to determine two angles, one on either side
of the normal axis 150, according to the parameter Gradient as well as the first pixel
difference set." The applicant points out that none of the cited references teach calculating the
gradient and then determining the two candidate angles on either side of the normal axis by
the first pixel difference unit also according to the gradient. A similar argument also applies

20   to corresponding method claim 32.

Claims 25 and 33

      Concerning support for claim 25, as quoted above, paragraph [0043] indicates that the
reference angle is 45 degrees in one embodiment "wherein Right_Ref_Diff ... of a pair of

25   pixel sets ... along an angle on the right side of the normal axis 150 (here, 45 degrees,)
whereas Left_Ref_Diff along an angle on the left side of the normal axis 150 (here, -45
degrees.)" The applicant points out that none of the cited references teach calculating the two
reference pixel differences along an angle of 45 degrees on either side of the normal axis of

the target pixel. The applicant also notes that neither vertical nor horizontal angles of interpolation are equivalent or similar to an angle of 45 degrees on either side of the normal axis. A similar argument also applies to corresponding method claim 33.

5   Claims 26 and 34

Concerning support for claim 26, the applicant points out that figure 2 shows the angle selection unit 210 including the angle voting unit 214. Additionally, paragraph [0045] states, "in conjunction with the operation of the angle voting unit 214, to determine an optimal angle Opt_Angle. The angle voting unit 214 operates to compare an angle at issue together with 10   two stored angles, Pre_Angle and Pre_Pre_Angle, from the checking and correcting operation corresponding to two previous pixels". Also see, for example, paragraph [0058] and paragraph [0066] detailing how the two previously utilized blending angles Pre_Angle and Pre_Pre_Angle are utilized by the angle voting unit 214 when determining the optimal blending angle. The applicant notes that none of the cited references teach determining the 15   optimal blending angle utilizing two previously determined blending angles respectively corresponding to two previously blended pixels. A similar argument also applies to corresponding method claim 34.

Claims 27 and 35
20   Concerning support for claim 27, the applicant points to paragraph [0096] stating, "the weighted blending unit 216 operates to weighted blend (or interpolate) pixel information along the selected optimal angle Opt_Angle and pixel information along the normal axis, so as to render the pixel to be interpolated." The applicant again points out that none of the cited references teach such operation because the optimal angle determined by the present 25   invention is different than that taught by the cited references. A similar argument also applies to corresponding method claim 34, and claims 27 and 25 are dependent claims and should be found allowable for at least the same reasons.

Claims 28 and 36

　　　Concerning support for claim 28, the applicant points out that paragraph [0096] states, "The pixel information along the optimal angle and the normal axis is weighted according certain weighting algorithm, and in this embodiment, a two-phase weighting algorithm is

5　　used in the weighted blending unit 216." The applicant points out that in addition to the fact that none of the cited references teach the same optimal angle as the present invention, the two-phase weighting algorithm of the present invention is also different. A similar argument also applies to corresponding method claim 36.

10　　Claims 29 and 37

　　　Concerning support for claim 29, see figure 2 showing the low-pass filter (LPF) 202 and paragraph [0018] stating, "The purpose of adopting a low-pass filtering operation before any further processing to the incoming data usually includes noise suppression or image smoothening." The applicant asserts that claims 29 and 37 should be found allowable for at

15　　least the same reasons as base claims 23 and 31, respectively.

Claims 30 and 38

　　　Concerning support for claim 30, paragraph [0038] states, "the second pixel difference unit 208 also operates to generate a second pixel difference set, according to an alternative

20　　pixel difference algorithm than the first pixel difference unit 206." The applicant asserts that claims 30 and 38 should be found allowable for at least the same reasons as base claims 23 and 31, respectively.

Conclusion

25　　　Thus, all pending claims are submitted to be in condition for allowance with respect to the cited art for at least the reasons presented above. The Examiner is encouraged to telephone the undersigned if there are informalities that can be resolved in a phone conversation, or if the Examiner has any ideas or suggestions for further advancing the

prosecution of this case.

Sincerely yours,

5 _Winston Hsu_____   Date: _____08/26/2008_____

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Note: Please leave a message in my voice mail if you need to talk to me. (The time in D.C.
is 12 hours behind the Taiwan time, i.e. 9 AM in D.C. = 9 PM in Taiwan.)